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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/091,508 | 10/30/1998 | JAMES T. CONNORS | 68567/PALL | 5023 |

7590 09/09/2004

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| EXAMINER |
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MENON, KRISHNAN S

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| ART UNIT | PAPER NUMBER |
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1723

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Commissioner for Patents

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 0804

Application Number: 09/091,508

Filing Date: October 30, 1998

Appellant(s): CONNORS ET AL.

Shannon Schemel
For Appellant

CORRECTED EXAMINER'S ANSWER:

A corrected Examiner's Answer is attached herewith, in response to the Board's order to clarify for the record the proper rejection of claims on appeal, and notification to appellants in writing as to the proper rejection of claims on appeal. Accordingly, the final rejection was copied into the "grounds for rejection" section of the Examiner's Answer. There is no material change to the final rejection itself, or to the Examiner's Answer.

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Patent Examiner



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 0804

Application Number: 09/091,508
Filing Date: October 30, 1998
Appellant(s): CONNORS ET AL.

Shannon Schemel
For Appellant

EXAMINER'S ANSWER

MAILED

SEP 09 2004

GROUP 1700

This is in response to the appeal brief filed 7/18/03.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

The rejection of claims 1 and 14-19 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

| | | |
|-----------|----------------|---------|
| 3344923 | Pall et al | 3-1964 |
| 5,543,047 | Stoyell et al | 8-1996 |
| 4,228,012 | Pall et al | 10-1980 |
| 4,517,085 | Driscoll et al | 5-1985 |
| 4,033,881 | Pall et al | 7-1977 |

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 and 14-18 are rejected under 35 USC 103(a) as being unpatentable over Pall et al (US 3,344,923) in view of Stoyell et al (US 5,543,047), Pall (US 4,228,012) and Driscoll et al (US 4,517,085).

Claim 19 is rejected under 35 USC 103(a) as being unpatentable over Pall et al (US 3,344,923) in view of Stoyell et al (US 5,543,047), Pall (US 4,228,012) and Driscoll et al (US 4,517,085) as applied to claim 1 above, and further in view of Pall (US 4,033,881)

The details of the final rejection are copied below:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 14-18 are rejected under 35 USC 103(a) as being unpatentable over Pall et al (US 3,344,923) in view of Stoyell et al (US 5,543,047), Pall (US 4,228,012) and Driscoll et al (US 4,517,085).

3. Concerning claim 1, Pall et al. (923) disclose a separation element (6,7) comprising two or more hollow pleated pack sections (15 and 16), each pack section (15 or 16) including a corrugated (in other words, pleated) porous (filter mesh) medium having a plurality of pleats and first and second ends, wherein the plurality of pleats includes roots, crowns, legs extending between roots and crowns, an inner periphery at the roots defining an upstream side and an outer periphery at the crowns defining a downstream side, and open joiner caps (18,25) being attached to at least one end of each of the two pack sections (15 and 16), and further the separation

element comprising first and second end caps (upper end cap 17 & lowest end cap 26) attached to the hollow separation arrangement, as in figs. 1 – 3 and 5 and in cols. 2 – 3. Pall et al. further disclose the pleated/corrugated porous medium (forming the hollow pack sections 15 and 16) comprising a polymeric (i.e. polytetrafluoroethylene, polyethylene, etc.) or glass fiber material, as in col. 3, lines 8 – 13 and fig. 5. Pall et al. also disclose the open joiner caps (18 & 25) being adjacent and secured together to coaxially connect the pack sections (15 and 16) and the open joiner caps (18 & 25) into a hollow separation arrangement, as in fig. 1 and cols. 2 – 3.

3. Pall et al. fail to disclose each pleat has a height h greater than $(D-d)/2$ where D is the outer diameter at the outer periphery of the plurality of pleats, and the first and second end caps including (comprising) polymeric or elastomeric material, and one of the first and second end caps (17 and 26) comprises a seal having an outside diameter greater than the largest outside diameter of the hollow separation arrangement. Stoyell et al. teach a separation element comprising at least one hollow pack section (10) comprising a porous medium comprising a polymeric or glass fiber material, and having first and second ends, and having a plurality of pleats (11) which include roots (11c), crowns (11b), legs extending between the roots and the crowns, an inner periphery at the roots defining an upstream side and an outer periphery at the crowns defining a downstream side and wherein each pleat has a height h greater than $(D-d)/2$ where D is the outer diameter at the outer periphery of the plurality of pleats, as in figs. 1 – 4 and cols. 3 – 5. Furthermore, Stoyell et al. teach the hollow pack section/separation element having first and second end caps (40) which comprise of polymeric or elastomeric material (in the form

of fluorinated ethylene-propylene fluoropolymer), as in col. 8, lines 20 – 52. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the separation element of Pall et al. by substituting each hollow pleated pack section in lieu of the hollow pleated pack section of the separation/filter element taught by Stoyell et al., in order to provide an improved separation element having increased surface area which increases the useful life of the filtering/separation element or pack section, as well as having greater resistance (i.e. being resistant to moisture, weathering and others due to its polymeric/thermoplastic or elastomeric constitution) to damage, as in col. 16, lines 49 – 63.

4. Although Pall et al. as modified by Stoyell et al. fail to disclose the length of the hollow separation arrangement formed by the coaxial connection of two pack sections and joiner end caps being at least about 40 inches and the interior diameter thereof is at least about 2 inches, it is considered obvious to one of ordinary skill in the art at the time of the invention to modify the length of the separation element of Pall et al. as modified by Stoyell et al., in such a way that the element has a length of at least about 40 inches and has an interior diameter of at least about 2 inches, as a matter of choice by the user, as well as to increase further the filtration capability of each separation element. Pall (012) teaches a similar separation element to that of Pall et al., in which the separation element comprises at least two or more hollow pleated pack sections being coaxially connected by open joiner caps to form a hollow separation arrangement, and Pall teaches the separation element could be formed by linking up to any desired number (i.e. up to any length which could be at least about 40 inches or more or less depending on the length of

each filter element/hollow pack section) of modular smaller (hollow pack sections) units in order to extend the filter capacity of the separation element (see col. 1, lines 15 – 20 of Pall [012]).

With regards to the interior diameter of each separation element being at least 2 inches, this is also considered a result-variable effective element, in other words, the interior diameter help determine the extent or amount of fluid which can be filtered and allowed to pass through the filter/separation element, and if there are more layers or the thickness of each porous medium forming the separation element is greater, this allows greater fluid filtration capacity at the same time slowing down the filtration rate, thereby allowing only a certain amount of filtered fluid through the filter media, and without changing the dimensions of the housing into which the separation element would be placed into, the only variable would be changed to accommodate a thicker or more layers of filter media would be the interior diameter of the separation element.

In the case law, Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984)), cert. Denied, 469 U.S. 830, 225 USPQ 232 (1984), the Fed. Circuit held that where the only difference between the prior art and the claims was a recitation of relative dimensions (i.e. such as the length and interior diameter) of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Here, the examiner considered that the separation element of Pall et al. as modified by Stoyell et al. and Pall would not perform differently than the claimed invention.

5. Pall et al. (923) as modified by Stoyell et al. and Pall (012), fail to disclose one of the first and second end caps comprises a seal having an outside diameter greater than the largest outside diameter of the hollow separation arrangement. Driscoll et al. teach a separation element comprising at least two hollow pack sections (18, 94) wherein each pack section (18) comprises a porous medium (94) and having open joiner caps (20, 64) being attached to at least one end of the hollow pack sections to form a hollow separation arrangement and having first and second end caps (14, 16) wherein one of the first and second end caps (at least end cap 16 is shown in fig. 2) comprises a seal (38) having an outside diameter greater than the largest outside diameter of the hollow separation arrangement, as in fig. 2 and cols. 3 – 4. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the separation element of Pall et al. (923) as modified by Stoyell et al. and Pall (012), by adding the embodiment taught by Driscoll et al., in order to provide an alternative end cap design for the separation element which provides a removable leak-proof end cap-seal arrangement for the separation element, thereby allowing access to the hollow pack sections for either replacement or changing to a new hollow pleated pack once one of the hollow pack sections has reached the end of its useful life.

6. Regarding claim 14, Pall et al. further disclose each pack section (15 or 16) including a core (30 or 31, respectively) disposed along the inner periphery of the pleats, as in figs. 1 and

5.

7. With regards to claim 16, Driscoll et al. further teach the end cap (16) having the seal (38) comprising an open end cap including a substantially cylindrical configuration having an outer periphery and a channel (formed by annular groove 36) circumferentially arranged in the outer periphery thereof and the seal (38) being positioned in the channel (36), as in fig. 2 and in col. 3.

8. Concerning claims 15 and 17, Stoyell et al. further teach the hollow pleated pack section (10) could be formed such that it is free of a core (20), as in cols 8, lines 4 – 11 and 21, lines 26 – 30. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the separation element of Pall et al. as modified by Stoyell et al., Pall and Driscoll et al., by substituting the hollow pack section with a core, with one which is coreless or free of a core, depending upon the direction of fluid flow through the hollow pleated pack sections such as when the flow through the separation element is from inside to outside thereof and in instances when radially inward forces on the separation element is absent or very low, thereby enabling reduction in the weight of the separation element (i.e. lighter separation element), as in col. 8, lines 7 – 11.

9. With respect to claim 18, Stoyell et al. also teach the legs of the pleats (11) are in intimate contact along substantially the entire height (i.e. also known as in “laid over state”) of the pleats (11), as in col. 4 and figs. 2 – 3. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the pleated filter medium/pack sections of Pall et al. as

modified by Stoyell et al., Pall and Driscoll et al., in lieu of the "laid-over" pleated filter arrangement/pack section (10) taught by Stoyell et al., in order to provide an improved pleated pack section/separation element having increased surface area which increases the useful life of the filtering/separation element or pack section, as in cols. 4, lines 22 – 29 and 16, lines 49 – 63.

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pall et al., Stoyell et al., Pall (012) and Driscoll et al. (085), as applied to claim 1 above, and further in view of Pall (US 4,033,881).

11. Concerning claim 19, Pall et al. (923), as modified by Stoyell et al., Pall (012) and Driscoll et al., fail to disclose the adjacent joiner caps being welded together. Pall (881) teaches a filter/separation element comprising two or more hollow pleated pack sections (10, 25) being joined by joiner/end caps (16, 17) to form a hollow separation arrangement, wherein adjacent joiner caps (right end cap 16, second end cap 17 attached to right end cap 16) are welded together, as in figs. 2 – 3 and cols. 5 – 6, particularly, in col. 6, lines 28 – 34. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the adjacent joiner caps of the separation element of Pall et al. (923), as modified by Stoyell et al., Pall (012) and Driscoll et al., in lieu of the welded adjacent joiner caps taught by Pall (881), in order to provide an alternative design and improved separation element having joiner caps which are more leak-proof than those having seals/gaskets joining separate joiner caps together, thus avoiding any containment/unfiltered fluid leaking into the cleaned/filtered fluid region of the separation element.

(11) Response to Argument

Appellant's main arguments are that the primary reference Pall (923) is a completely different and teaches away from the claimed invention of two or more hollow pack sections being coaxially joined by open joiner, and that the references in combination do not teach the 'at least 40 inch length and at least 2 inch interior diameter'.

1. Argument that "the claims are directed to a separation element including two or more pack sections and adjacent open joiner caps ... an arrangement that allows fluid to flow through the connected pack sections" whereas, "Pall (923) is directed to filter units having a reserve filter element in series with the primary filter element, the reserve filter element not coming in to use until the primary filter element ... becomes plugged": Claim 1 is open ended (comprising). Pall (923) teaches two filters coupled together with open joiner caps to coaxially connect them. Appellant's argument re the second filter of the '923 patent being a reserve filter is not germane to the claim because the relief valve interposed between the filters is an added feature. See figures 1-3, col 2 lines 5-10 and col 4 lines 5-69. The 'reserve filter feature' is brought about by the relief valve-assembly, which is in the annular space outside the coupling between the filters. Re Pall (923) teaching away from connecting the pack sections and open joiner caps into a hollow separation arrangement "that allows the fluids to flow through all the pack sections", the claim does not recite "... allows the fluids to flow through all the pack sections", and Pall (923) filter assembly does allow the filtrate flow to go through all the filter elements all the time, and the fluid to be filtered to go through all the elements when the relief valve opens. Also, please note that the "Disclosed examples and preferred embodiments do not constitute a teaching away

from a broader disclosure or nonpreferred embodiments” (In re *Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971)).

2. Re argument that the secondary references fail to remedy the deficiencies of Pall (923) in terms of the coaxial connections with open joiner caps: Even though the secondary references were not used for this purpose, Pall (012) teaches linking two or more modular units end-to-end in coaxial connection to increase the filter capacity (col 1 lines 15-33).

3. Argument re the ‘at least 40 inch length’ and ‘at least 2 inch’ diameter of the hollow separation arrangement: These are result-effective variables which would be determined based on the space availability for filter installation and the filter capacity required. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). Pall (012) teaches coupling modular units end-to-end to extend filter capacity (col 1 lines 15-33). Also, In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. In this instant case, the filter assembly as taught by Pall (923) in view of Stoyell and Pall (012) would not perform differently from what is claimed in claim 1. Also, Pall (012) teaches ‘any number of modular units’ which means ‘to any length’ including 40 inches.

4. Argument re increasing length without increasing diameter, again, claim 1 does not positively recite a structural connection between the length and diameter for the 'packs'. Re argument that the claimed combination of length and interior diameter provides much higher throughput, the higher throughput is an obvious result of providing a larger filter, which is what the examiner was trying to explain in the quoted paragraph from the final rejection.

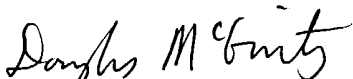
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Krishnan Menon
Patent Examiner
August 24, 2004


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